Grid-Enabled Interactive Data Language for Astronomical Data, Phase I

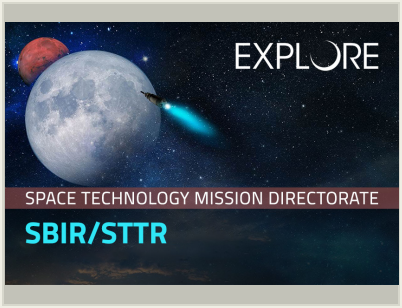
Completed Technology Project (2007 - 2007)

Project Introduction

Grid technologies provide a valuable solution for data intensive scientific applications but are not readily available for astronomical data and Interactive Data Language (IDL) widely used in astronomy. There is a need for tools allowing IDL and astronomical data to interoperate with Grids. Tech-X Corporation proposes to develop a set of tools, GRIDL, for accessing and manipulating of distributed astronomical data via IDL clients. GRIDL will automate generation of the IDL clients of Web Services for analysis and visualization of astronomical data and provide services for running parallel and serial IDL processes on Grids facilitating astronomical data analysis. In Phase I we will develop a prototype of GRIDL working with Flexible Image Transport System (FITS). Based on the mapping of FITS data types to the Web Services Definition Language, we will implement a prototype Web Service with an IDL client for accessing remote FITS data and develop a prototype Web Service for running parallel IDL processes on a Grid. Our approach is based on the ability IDL to call external C and Java and the Grid interoperability with these languages. In Phase II we will fully implement the GRIDL and include other data formats common in astronomy.

Anticipated Benefits

IDL tools are employed by technical professionals solving problems in various industries. Researchers in weather observation, climate modeling and medical imaging have the same needs for accessing remote data and processing data remotely. Distributed engineering teams in industries like aerospace engineering and automotive design would also benefit from a tool like GRIDL. These are just a few examples of potential applications outside of NASA. IDL has customers in these industries with established needs for the type of solution provided by GRIDL. By licensing the software developed under this proposal to the commercial vendor of IDL software, Tech-X Corporation can leverage the industry expertise to make these tools available to their existing customers and to potentially attract new customers by making these established technologies better suited to emerging paradigms such as Grid environments. GRIDL enables astronomical researchers to use the IDL tools to which they are accustomed within the emerging standard for remote, distributed computing. NASA projects provide collaborators from various, distributed research organizations with remote access to a tremendous amount of data. Grid computing is becoming the widely accepted paradigm for such distributed collaborations. For example, researchers participating in the US National Virtual Observatory would benefit by having their data and tools available within a standardized environment. Other projects, such Deep Impact and the Mars Reconnaissance Orbiter are examples of projects providing data to a network of researchers around the world. Once these tools are developed, Tech-X Corporation will license them to ITT Visual Information Solutions providing IDL. Consulting work would likely also be a part of the commercial endeavor.



Grid-Enabled Interactive Data Language for Astronomical Data, Phase I

Table of Contents

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

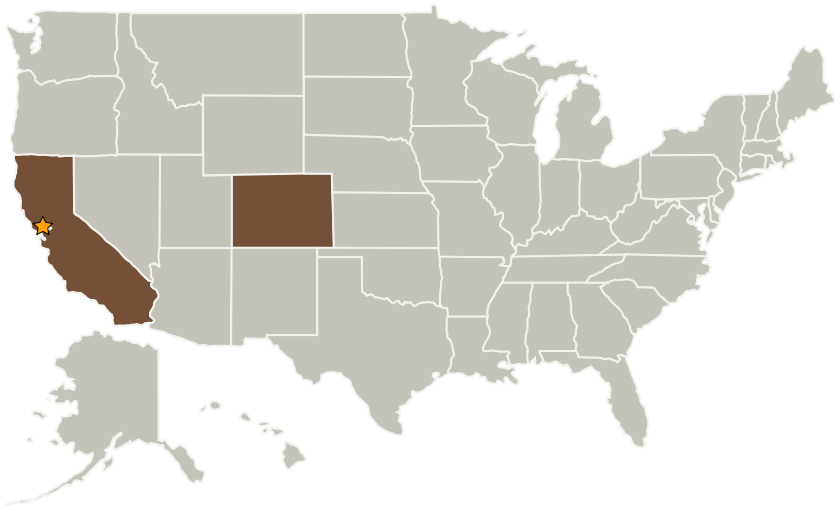
Small Business Innovation Research/Small Business Tech Transfer

Small Business Innovation Research/Small Business Tech Transfer

Grid-Enabled Interactive Data Language for Astronomical Data, Phase I

Completed Technology Project (2007 - 2007)

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Tech-X Corporation	Supporting Organization	Industry	Boulder, Colorado

Primary U.S. Work Locations	
California	Colorado

Project Management

Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Project Manager:
David L Kao

Principal Investigator:
Svetlana Shasharina

Technology Areas

Primary:

- TX02 Flight Computing and Avionics
  - TX02.2 Avionics Systems and Subsystems
    - TX02.2.6 Data Acquisition Systems